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**Watanabe et al.**

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(54) **POLYCRYSTALLINE GALLIUM-NITRIDE  
SELF-SUPPORTING SUBSTRATE AND  
LIGHT-EMITTING ELEMENT USING SAME**

(52) **U.S. Cl.**  
CPC ..... **H01L 33/18** (2013.01); **C30B 9/00**  
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(58) **Field of Classification Search**  
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C30B 9/12; C30B 19/02; C30B  
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See application file for complete search history.

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(\*) Notice: Subject to any disclaimer, the term of this  
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(30) **Foreign Application Priority Data**

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(57) **ABSTRACT**

Provided is a self-supporting polycrystalline GaN substrate  
composed of GaN-based single crystal grains having a  
specific crystal orientation in a direction approximately  
normal to the substrate. The crystal orientations of indi-  
vidual GaN-based single crystal grains as determined from  
inverse pole figure mapping by EBSD analysis on the  
(Continued)

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